

Abstract

A discontinuous lignocellulose fiber is described for use as a reinforcing filler for thermoplastic composite compositions. The fiber filler includes a significant percentage by weight of long, "hair-like" fibers. Specifically, at least about 20 percent by weight of the fiber filler is discontinuous lignocellulose fiber with a fiber length greater than about 15 millimeters and a fiber diameter less than about 0.5 millimeters. A moldable thermoplastic composite composition including the discontinuous lignocellulose fiber comprises about 20 to about 50 percent by weight of the fiber filler and about 50 to about 80 percent by weight thermoplastic. The discontinuous lignocellulose fiber filler yields thermoplastic composite compositions having improved physical properties over basic thermoplastic. The improved physical properties can be achieved without the use of coupling agents, although coupling agents may be used to further enhance the composite properties. The discontinuous lignocellulose fiber is preferably derived from virgin, waste wood from either softwood or hardwood tree species depending on the end use of the composite composition. The thermoplastic can be selected from a number of post-consumer or post-industrial waste sources. Processes for the manufacture of the discontinuous lignocellulose fiber reinforcing filler and the thermoplastic composite compositions are also disclosed.